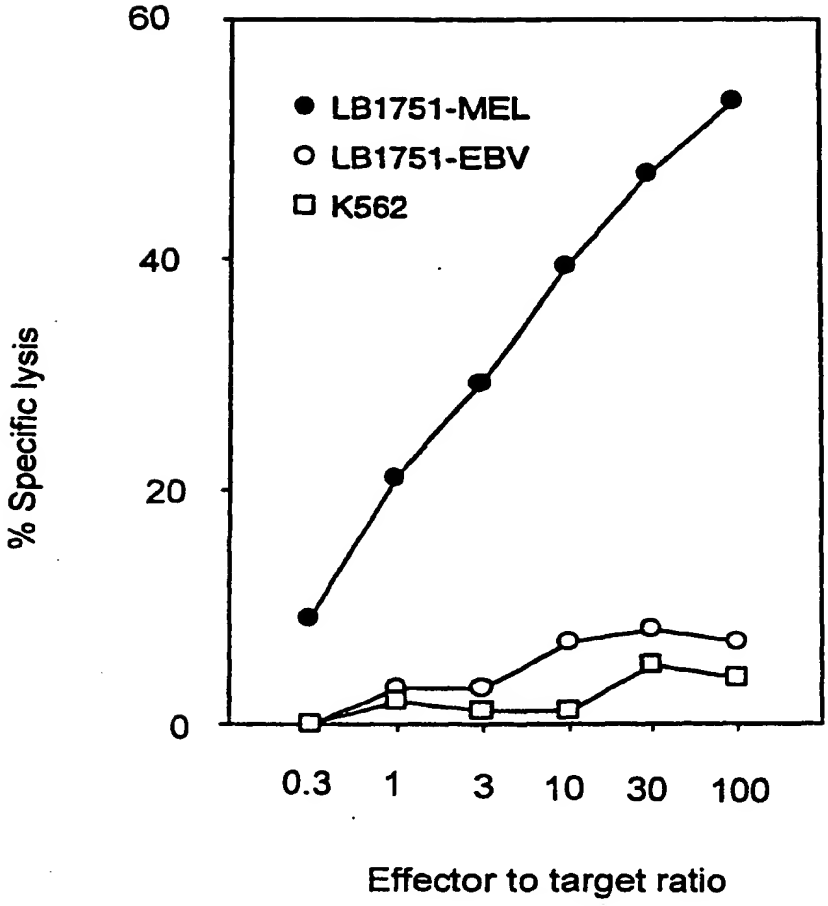

60
40
20
0
% Specific lysis
LB1751-MEL
LB1751-EBV
K562
0.3
1
3
10
30
100
Effector to target ratio

Fig.1

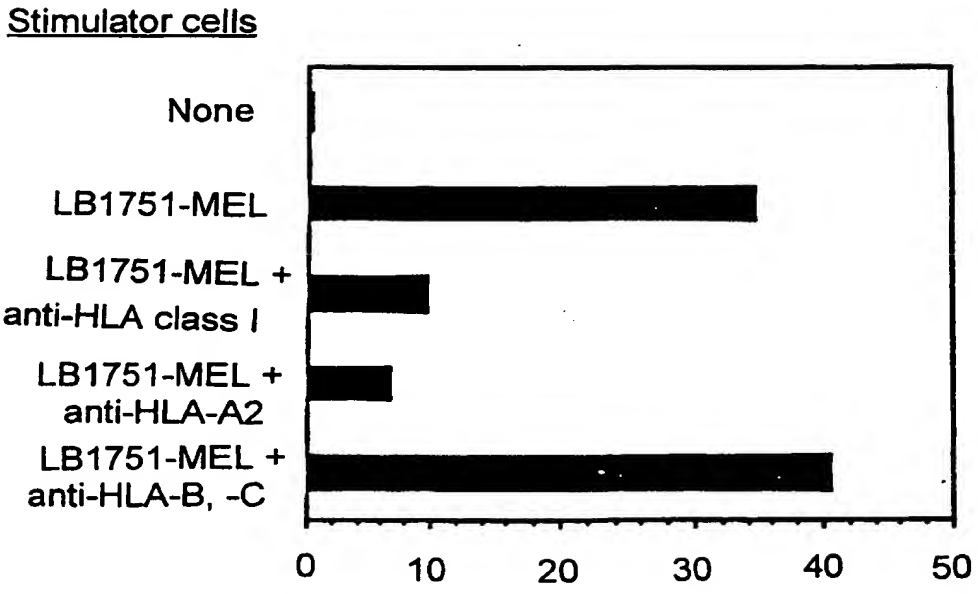
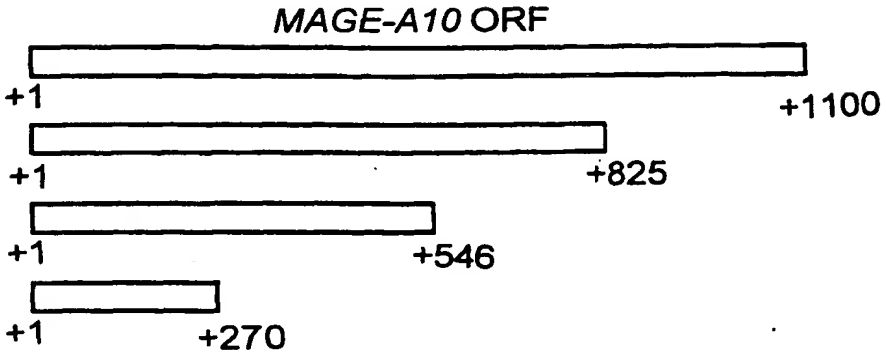

Stimulator cells
None
LB1751-MEL
LB1751-MEL + anti-HLA class I
LB1751-MEL + anti-HLA-A2
LB1751-MEL + anti-HLA-B, -C
0
10
20
30
40
50
TNF released by CTL 447A/5 (pg/ml)

Fig. 2

3/16

Sequence cotransfected with HLA-A2.1



TNF released by CTL 447A/5 (pg/ml)

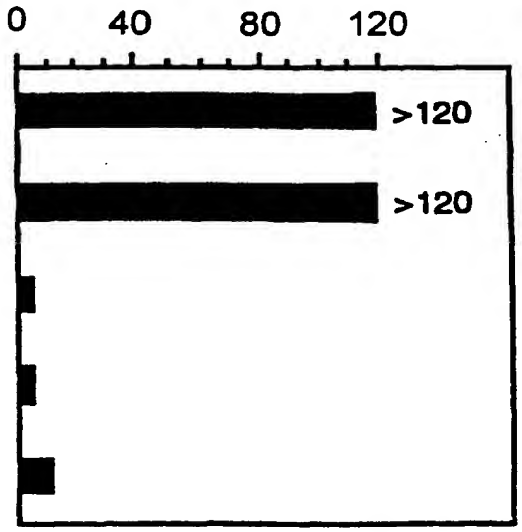


Fig. 3

Fig. 4a

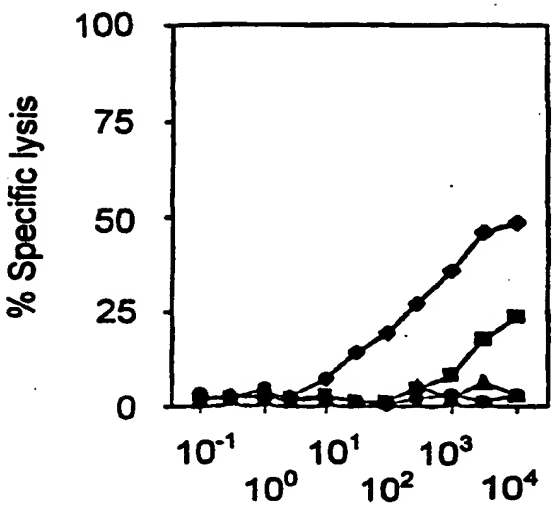
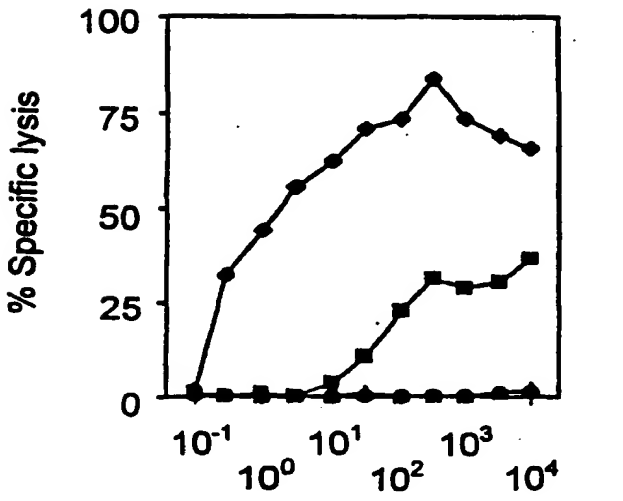

100
75
50
25
0
% Specific lysis
10^{-1} 10^{0} 10^{1} 10^{2} 10^{3} 10^{4}
Peptide concentration (nM)
● CMLLVFGIDV(182 – 191)
▲ MLLVFGIDV(183 – 191)

Fig. 4b


100
75
50
25
0
% Specific lysis
10^{-1} 10^{0} 10^{1} 10^{2} 10^{3} 10^{4}
Peptide concentration (nM)
◆ GLYDGMEHL(254 – 262)
■ GLYDGMEHLI(254 – 263)

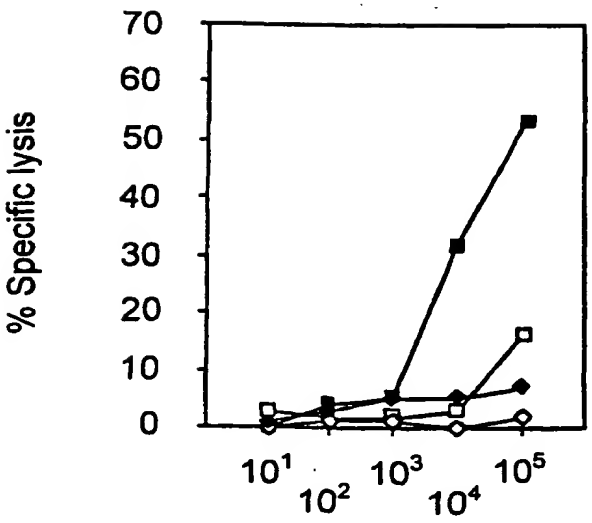

70
60
50
40
30
20
10
0
% Specific lysis
10¹
10²
10³
10⁴
10⁵
Peptide concentration (nM)
GLYDGREHS (No Ab)
GLYDGREHS (MA2.1)
GLYDGREHSV (No Ab)
GLYDGREHSV (MA2.1)

Fig. 5

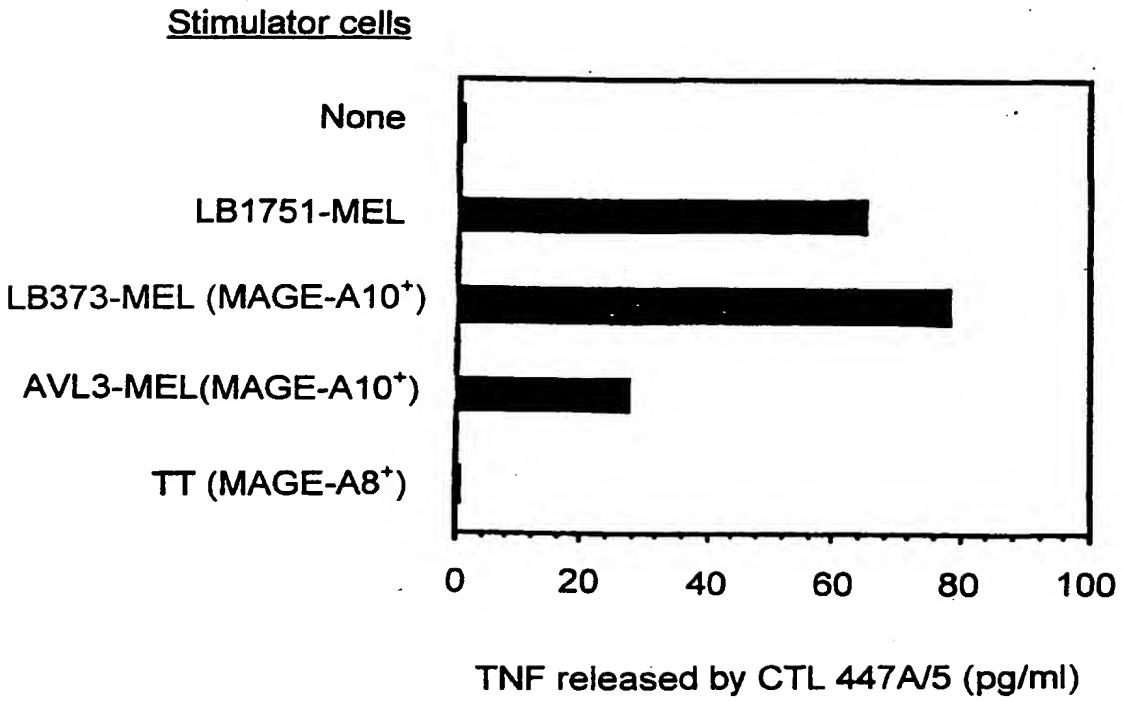

Stimulator cells
None
LB1751-MEL
LB373-MEL (MAGE-A10+)
AVL3-MEL(MAGE-A10+)
TT (MAGE-A8+)
0
20
40
60
80
100
TNF released by CTL 447A/5 (pg/ml)

Fig. 6

SEQ ID NO. 1

MPRAPKRQRCMPEEDLQSQSETQGLEGAQAPLAVEEDASSSTSTSSSFPSSFPSSSSSSSSSCYPLIPS
TPEEVSADDETPNPPQSAQIACSSPSVVASLPLDQSDEGSSSQKEESPSTLQVLPDSESLPRSEIDEKV
TDLVQFLLFKYQMKEPITKAEILESVIKNYEDHFPLLFSEASECMLLVFGIDVKEVDPTGHSFVLVTSL
GLTYDGMLSDVQSMPKTGILILILSIIFIEGYCTPEEVIWEALNMMGLYDGMEHLIYGEPRKLLTQDWV
QENYLEYRQVPGSDPARYEFLWGPRAHAEIRKMSLLKFLAKVNGSDPRSFPLWYEEALKDEEERAQDRI
ATTDDTTAMASASSSATGSFSYPE

Fig. 7

SEQ ID NO. 2

MLLGQKSQRYKAEEGLQAQGEAPGLMDVQIPTAEEQKAASSSSTLIMGTLEEVTDSGSPSPPQSPEGAS
SSLTVTDSTLWSQSDEGSSSNEEEGPSTSPDPAHLESLFREALDEKVAELVRFLLRKYQIKEPVTKAEM
LESVIKNYKNHFPDIFSKASECMQVIFGIDVKEVDPAGHSYILVTCLGLSYDGLLGDDQSTPKTGLLII
VLGMILMEGSRAPEEAIWEALSVMGAV

Fig. 8

Fig. 9

SEQ ID NO. 3

```
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  61 gggctgtcgg gagtaaatct gaatacctgg aggacaccca aataaaggaa gtccccgtct
 121 tgtccccctc ccctgcccac caccccccgc ccccccgcca aatgtctgct ccttctgtca
 181 gctttgggaa tcccatgcag gtgtgatcgt gtggtgcccc tccccacttc tgcctgccgg
 241 gtctcaggga ggtgaggacc ttggtctgag ggttgctaag aagttattac agggttccac
 301 acttggtcaa cagagggagg agtcccagaa tctgcaggac ccaaggggtg ccccccttagt
 361 gaggactgga ggtacctgca gcccagaaag aagggatgtc acagagtctg gctgtccccc
 421 gttcttagct ctgaggggac ctgatcagga ttggcactaa gtggcaagct caatttttacc
 481 acaggcagga agatgaggaa ccctcaggga aatggagttt tggtgtaaag gggagatatc
 541 agccctggac accccacagg gatgacagga tgtggctcct tcttactttt gttttggaat
 601 ctcagggagg tgagaacctt gctctcagag ggtgactcaa gtcaacacag ggaacccctc
 661 ttttctacag acacagtggg tcgcaggatc tgacaagagt ccaggtaagg aacctgaggg
 721 aaatctgagg gtacccccag cccataacac agatggggtc cccacagaaa tctgccatga
 781 ccctactgtc actctggaga acccagtcag ggctgtccgc tgagtctccc tgtcttatac
 841 aaggatcact ggtctctggg agggagaggt gttggtctaa gggagctgca ctcgggtcag
 901 cagagggagg gtcccagacc ctgccaggag tcaaggtgag gactgagggg acaccattct
 961 ccaaacgcac aggactcagc cccaccctac cccttctgtc agccacggga attcatgggg
1021 aactgggggt agatggactc ccctcacttc ctctttccat gtctcctgga ggtaggacct
1081 tggtttaagg aagtggcctc agatcaacaa agggagggtc ccaggtcgta tcaggcatca
1141 agaagaggac caagcaggct cctcacccca gtacacatgg acccagctga atatggccac
1201 ctcttgctgt cttttctggg aggacctctg cagttgtggc cagatgtggg tcccctcatg
1261 tcttctattt cgtatcaggg atgtaagctt ttgatctgag agtttcttag accagcaaag
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1381 ccaccccagg gtagtgggga actcacagag tccagcccac cctcctgaca acactgggag
1441 gctggggctg tgcttgcagc ctgaaccctg agggcccctc aattcctctt tcaggagctc
1501 cagggactgt gaggtgaggc cttggtctaa ggcagtgttt tcaggtcaca gagcagaaag
1561 ggcccagaca gtgccaggag tcaaggtgag gtgcatgccc tgaatgtgta ccaagggccc
1621 cacctgctcc aggacaaagt ggaccccact gcatcagctc cacctaccct actgtcagtc
1681 ctggagcctt ggcctctgcc ggctgcatcc tgaggagcca tctctcactt ccttcttcag
1741 gttctcaggg gacagggaga gcaagaggtc aagagctgtg ggacaccaca gagcagcact
1801 gaaggagaag acctgtaagt tggcctttgt tagaacctcc agggtgtggt tctcagctgt
1861 ggccacttac accctccctc tctccccagg cctgtgggtc cccatcgccc aagtcctgcc
1921 cacactccca cctgctaccc tgatcagagt catcatgcct cgagctccaa agcgtcagcg
1981 ctgcatgcct gaagaagatc ttcaatccca aagtgagaca cagggcctcg agggtgcaca
2041 ggctcccctg gctgtggagg aggatgcttc atcatccact tccaccagct cctcttttcc
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2161 caccccagag gaggtttctg ctgatgatga gacaccaaat cctccccaga gtgctcagat
2221 agcctgctcc tccccctcgg tcgttgcttc ccttccatta gatcaatctg atgagggctc
2281 cagcagccaa aaggaggaga gtccaagcac cctacaggtc ctgccagaca gtgagtcttt
2341 acccagaagt gagatagatg aaaaggtgac tgatttggtg cagtttctgc tcttcaagta
2401 tcaaatgaag gagccgatca caaaggcaga aatactggag agtgtcataa aaaattatga
2461 agaccacttc cctttgttgt ttagtgaagc ctccgagtgc atgctgctgg tctttggcat
2521 tgatgtaaag gaagtggatc ccactggcca ctcctttgtc cttgtcacct ccctgggcct
2581 cacctatgat gggatgctga gtgatgtcca gagcatgccc aagactggca ttctcatact
2641 tatcctaagc ataatcttca tagagggcta ctgcacccct gaggaggtca tctgggaagc
2701 actgaatatg atggggctgt atgatgggat ggagcacctc atttatgggg agcccaggaa
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2881 gagtctcctg aaatttttgg ccaaggtaaa tgggagtgat ccaagatcct tcccactgtg
2941 gtatgaggag gctttgaaag atgaggaaga gagagcccag gacagaattg ccaccacaga
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3001 tgatactact gccatggcca gtgcaagttc tagcgctaca ggtagcttct cctaccctga
3061 ataaagtaag acagattctt cactgtgttt taaaaggcaa gtcaaatacc acatgatttt
3121 actcatatgt ggaatctaaa aaaaaaaaaa aaaaaagttg gtatcatgga agtagagagt
3181 agagcagtag ttacattaca attaaatagg aggaataagt tctagtgttc tattgcacag
3241 taggatgact atagttaaca ttaagatatt gtatattaca aaacagctag aaggaaggct
3301 tttcaatatt gtcaccaaaa agaaatgata aatgcatgag gtgatggata cactacctga
3361 tttgatcatt atactacata tacatgaatc agaacatcaa attgtacctc ataaatatct
3421 acaattacat gtcagttttt gtttatgttt ttgttttttt ttaatttatg aaaacaaatg
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Fig. 9 continued

SEQ ID NO. 4

Fig. 10a

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YYMKYGTKCT GAGGGACAGG CTTGAGATCG GCTGAAGAGA GCGGGCCCAG     100
GCTCTGTGAG GAGGCAAGGG AGGTGAGAAC CTTGCTCTCA GAGGGTGACT     150
CAAGTCAACA CAGGGAACCC CTCTTTTCTA CAGACACAGT GGGTCGCAGG     200
ATCTGACAAG AGTCCAGGTT CTCAGGGGAC AGGGAGAGCA AGAGGTCAAG     250
AGCTGTGGGA CACCACAGAG CAGCACTGAA GGAGAAGACC TGCCTGTGGG     300
TCCCCATCGC CCAAGTCCTG CCCACACTCC CACCTGCTAC CCTGATCAGA     350
GTCATCATGC CTCGAGCTCC AAAGCGTCAG CGCTGCATGC CTGAAGAAGA     400
TCTTCAATCC CAAAGTGAGA CACAGGGCCT CGAGGGTGCA CAGGCTCCCC     450
TGGCTGTGGA GGAGGATGCT TCATCATCCA CTTCCACCAG CTCCTCTTTT     500
CCATCCTCTT TTCCCTCCTC CTCCTCTTCC TCCTCCTCCT CCTGCTATCC     550
TCTAATACCA AGCACCCCAG AGGAGGTTTC TGCTGATGAT GAGACACCAA     600
ATCCTCCCCA GAGTGCTCAG ATAGCCTGCT CCTCCCCCTC GGTCGTTGCT     650
TCCCTTCCAT TAGATCAATC TGATGAGGGC TCCAGCAGCC AAAAGGAGGA     700
GAGTCCAAGC ACCCTACAGG TCCTGCCAGA CAGTGAGTCT TTACCCAGAA     750
GTGAGATAGA TGAAAAGGTG ACTGATTTGG TGCAGTTTCT GCTCTTCAAG     800
TATCAAATGA AGGAGCCGAT CACAAAGGCA GAAATACTGG AGAGTGTCAT     850
AAAAAATTAT GAAGACCACT TCCCTTTGTT GTTTAGTGAA GCCTCCGAGT     900
GCATGCTGCT GGTCTTTGGC ATTGATGTAA AGGAAGTGGA TCCCACTGGC     950
CACTCCTTTG TCCTTGTCAC CTCCCTGGGC CTCACCTATG ATGGGATGCT    1000
GAGTGATGTC CAGAGCATGC CCAAGACTGG CATTCTCATA CTTATCCTAA    1050
GCATAATCTT CATAGAGGGC TACTGCACCC CTGAGGAGGT CATCTGGGAA    1100
GCACTGAATA TGATGGGGCT GTATGATGGG ATGGAGCACC TCATTTATGG    1150
GGAGCCCAGG AAGCTGCTCA CCCAAGATTG GGTGCAGGAA AACTACCTGG    1200
AGTACCGGCA GGTGCCTGGC AGTGATCCTG CACGGTATGA GTTTCTGTGG    1250
GGTCCAAGGG CTCATGCTGA AATTAGGAAG ATGAGTCTCC TGAAATTTTT    1300
GGCCAAGGTA AATGGGAGTG ATCCAAGATC CTTCCCACTG TGGTATGAGG    1350
AGGCTTTGAA AGATGAGGAA GAGAGAGCCC AGGACAGAAT TGCCACCACA    1400
GATGATACTA CTGCCATGGC CAGTGCAAGT TCTAGCGCTA CAGGTAGCTT    1450
CTCCTACCCT GAATAAAGTA AGACAGATTC TTCACTGTGT TTTAAAAGGC    1500
AAGTCAAATA CCACATGATT TTACTCATAT GTGGAATCTA AAAAAAAAAA    1550
AAAAAAAAGT TGGTATCATG GAAGTAGAGA GTAGAGCAGT AGTTACATTA    1600
CAATTAAATA GGAGGAATAA GTTCTAGTGT TCTATTGCAC AGTAGGATGA    1650
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TGTTACTTTT ACTAGAATGT TTATGAGCTT CAGAATCTAA GGTCACACGT      2400
TCGTTTCTGT TTATCCAGTT TAAGAAACAG TTTTGCTATT TTGTAAAACA      2450
AATTGGGAAC CCTTCCATCA TATTTGTAAT CTTTAATAAA ATAACATGGA      2500
ATTGGAATAG TAATTTTCTT GGAAATATGA AAAAATAGTA AAATAGAGAA      2550
AATAATTTT                                                  2559
```

Fig. 10b

Fig. 11a

SEQ ID NO. 5

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121 gggaagggat gtggcccccc cactttctgg taggggggcc tcaaggagat ggtggccttg
181 gcatgcaaga cacatccacg gttcagcagg aaggaaaggg ccatgccttg tcgtggagta
241 aatatgaata cctggatgac acccagacag agaaagaccc catgaaacct actacttctg
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361 ggtctcaggg aggtagcaac ctgggtctga agggcgtcct cagctcagca gagggagcca
421 cacctgttca acagagggac ggggtcacag gatctgcagg acccaagatg tgctcacttt
481 gtgatgaatg ggggtactcc tggcctggaa agaagggacc ccacaaagtc tggctaactt
541 tggttattat ctctggggga acccgatcaa gggtggccct aagtggagat ctcatctgta
601 ctgtgggcag gaagttgggg aaacgcagga agataaggtc ttggtggtaa ggggagatgt
661 ctgctcatat cagggtgttg tgggttgagg aagggcgggc tccatcaggg gaaagatgaa
721 taaccccctg aagaccttag aacccaccac tcaagaacaa gtagggacag atcctagtgt
781 cacccctgga caccccaccc agtggtcatc agatgtggtg gctcctcatt tctctcttga
841 gtctcaggga agtgaggacc ttgttctcag agggcaactc aggacaaaac agggaccccc
901 atgtgggcaa cagactcagt ggtccaagaa tctaccaaga gtctaggtga caacactgag
961 ggaagattga gggtaccctc gatggttctc ctagcaggca aaaaacagat gggggcccaa
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1081 gcccctgtgt tataccagac tcattggtct cagggagaag aaggccttgg tctgagggca
1141 ctgcattcag gtcagcagag cgggggtcca aggccctgcc aggagtcagg gactcagagg
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1261 agtgcaggga aaggtgggtg gatggaatcc cctcatttgc tcttccagtg tctcctggag
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1381 attttgtgta gctattgctt ttttctcacc ctaggacaga cacgtgggcc ccattgcatt
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3721 atgaaattga attaaatatg aataaataag tccccctgct cactggctca ttttttccca
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```

Fig. 11b

SEQ ID NO. 6

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TCACAGAGCA TAAGAGGCCC AGGCAGTAGT AGCAGTCAAG CTGAGGTGGT         100
GTTTCCCCTG TATGTATACC AGAGGCCCCT CTGGCATCAG AACAGCAGGA         150
ACCCCACAGT TCCTGGCCCT ACCAGCCCTT TTGTCAGTCC TGGAGCCTTG         200
GCCTTTGCCA GGAGGCTGCA CCCTGAGATG CCCTCTCAAT TTCTCCTTCA         250
GGTTCGCAGA GAACAGGCCA GCCAGGAGGT CAGGAGGCCC CAGAGAAGCA         300
CTGAAGAAGA CCTGTAAGTA GACCTTTGTT AGGGCATCCA GGGTGTAGTA         350
CCCAGCTGAG GCCTCTCACA CGCTTCCTCT CTCCCCAGGC CTGTGGGTCT         400
CAATTGCCCA GCTCCGGCCC ACACTCTCCT GCTGCCCTGA CCTGAGTCAT         450
C                                                             451
ATG CTT CTT GGG CAG AAG AGT CAG CGC TAC AAG GCT GAG GAA        493
GGC CTT CAG GCC CAA GGA GAG GCA CCA GGG CTT ATG GAT GTG        535
CAG ATT CCC ACA GCT GAG GAG CAG AAG GCT GCA TCC TCC TCC        577
TCT ACT CTG ATC ATG GGA ACC CTT GAG GAG GTG ACT GAT TCT        619
GGG TCA CCA AGT CCT CCC CAG AGT CCT GAG GGT GCC TCC TCT        661
TCC CTG ACT GTC ACC GAC AGC ACT CTG TGG AGC CAA TCC GAT        703
GAG GGT TCC AGC AGC AAT GAA GAG GAG GGG CCA AGC ACC TCC        745
CCG GAC CCA GCT CAC CTG GAG TCC CTG TTC CGG GAA GCA CTT        787
GAT GAG AAA GTG GCT GAG TTA GTT CGT TTC CTG CTC CGC AAA        829
TAT CAA ATT AAG GAG CCG GTC ACA AAG GCA GAA ATG CTT GAG        871
AGT GTC ATC AAA AAT TAC AAG AAC CAC TTT CCT GAT ATC TTC        913
AGC AAA GCC TCT GAG TGC ATG CAG GTG ATC TTT GGC ATT GAT        955
GTG AAG GAA GTG GAC CCT GCC GGC CAC TCC TAC ATC CTT GTC        997
ACC TGC CTG GGC CTC TCC TAT GAT GGC CTG CTG GGT GAT GAT       1039
CAG AGT ACG CCC AAG ACC GGC CTC CTG ATA ATC GTC CTG GGC       1081
ATG ATC TTA ATG GAG GGC AGC CGC GCC CCG GAG GAG GCA ATC       1123
TGG GAA GCA TTG AGT GTG ATG GGG GCT GTA TGA                   1156
TGGGAGGGAG CACAGTGTCT ATTGGAAGCT CAGGAAGCTG CTCACCCAAG        1206
AGTGGGTGCA GGAGAACTAC CTGGAGTACC GCCAGGCGCC CGGCAGTGAT        1256
CCTGTGCGCT ACGAGTTCCT GTGGGGTCCA AGGGCCCTTG CTGAAACCAG       1306
CTATGTGAAA GTCCTGGAGC ATGTGGTCAG GGTCAATGCA AGAGTTCGCA       1356
TTTCCTACCC ATCCCTGCAT GAAGAGGCTT TGGGAGAGGA GAAAGGAGTT       1406
TGAGCAGGAG TTGCAGCTAG GGCCAGTGGG GCAGGTTGTG GGAGGGCCTG       1456
GGCCAGTGCA CGTTCCAGGG CCACATCCAC CACTTTCCCT GCTCTGTTAC       1506
ATGAGGCCCA TTCTTCACTC TGTGTTTGAA GAGAGCAGTC ACAGTTCTCA       1556
GTAGTGGGGA GCATGTTGGG TGTGAGGGAA CACAGTGTGG ACCATCTCTC       1606
AGTTCCTGTT CTATTGGGCG ATTTGGAGGT TTATCTTTGT TTCCTTTTGG       1656
AATTGTTCCA ATGTTCCTTC TAATGGATGG TGTAATGAAC TTCAACATTC       1706
ATTTTATGTA TGACAGTAGA CAGACTTACT GCTTTTTATA TAGTTTAGGA       1756
GTAAGAGTCT TGCTTTTCAT TTATACTGGG AAACCCATGT TATTTCTTGA       1806
ATTC                                                        1810
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Fig. 12

SEQ ID NO. 7

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ACCTGCTCCA GGACAAAGTG GACCCCACTG CATCAGCTCC ACCTACCCTA      50
CTGTCAGTCC TGGAGCCTTG GCCTCTGCCG GCTGCATCCT GAGGAGCCAT     100
CTCTCACTTC CTTCTTCAGG TTCTCAGGGG ACAGGGAGAG CAAGAGGTCA     150
AGAGCTGTGG GACACCACAG AGCAGCACTG AAGGAGAAGA CCTGTAAGTT     200
GGCCTTTGTT AGAACCTCCA GGGTGTGGTT CTCAGCTGTG GCCACTTACA     250
CCCTCCCTCT CTCCCCAGGC CTGTGGGTCC CCATCGCCCA AGTCCTGCCC     300
ACACTCCCAC CTGCTACCCT GATCAGAGTC ATC                       333
ATG CCT CGA GCT CCA AAG CGT CAG CGC TGC ATG CCT GAA GAA     375
GAT CTT CAA TCC CAA AGT GAG ACA CAG GGC CTC GAG GGT GCA     417
CAG GCT CCC CTG GCT GTG GAG GAG GAT GCT TCA TCA TCC ACT     459
TCC ACC AGC TCC TCT TTT CCA TCC TCT TTT CCC TCC TCC TCC     501
TCT TCC TCC TCC TCC TCC TGC TAT CCT CTA ATA CCA AGC ACC     543
CCA GAG GAG GTT TCT GCT GAT GAT GAG ACA CCA AAT CCT CCC     585
CAG AGT GCT CAG ATA GCC TGC TCC TCC CCC TCG GTC GTT GCT     627
TCC CTT CCA TTA GAT CAA TCT GAT GAG CGC TCC AGC AGC CAA     669
AAG GAG GAG AGT CCA AGC ACC CTA CAG GTC CTG CCA GAC AGT     711
GAG TCT TTA CCC AGA AGT GAG ATA GAT GAA AAG GTG ACT GAT     753
TTG GTG CAG TTT CTG CTC TTC AAG TAT CAA ATG AAG GAG CCG     795
ATC ACA AAG GCA GAA ATA CTG GAG AGT GTC ATA AAA AAT TAT     837
GAA GAC CAC TTC CCT TTG TTG TTT AGT GAA GCC TCC GAG TGC     879
ATG CTG CTG GTC TTT GGC ATT GAT GTA AAG GAA GTG GAT CC      920
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Fig. 13